

Space News **ROUNDUP!**

NASA

VOL. 3, NO. 13

MANNED SPACECRAFT CENTER, HOUSTON, TEXAS

APRIL 15, 1964

FIRST MISSION TERMED 'CLEAN AND GREEN' -

Gemini Program Gets Off To A Successful Start

The first phase of the nation's second manned space program began like a storybook success last Wednesday as a Titan II rocket propelled a Gemini spacecraft into orbit in an almost perfect launching from Launch Complex 19 at Cape Kennedy.

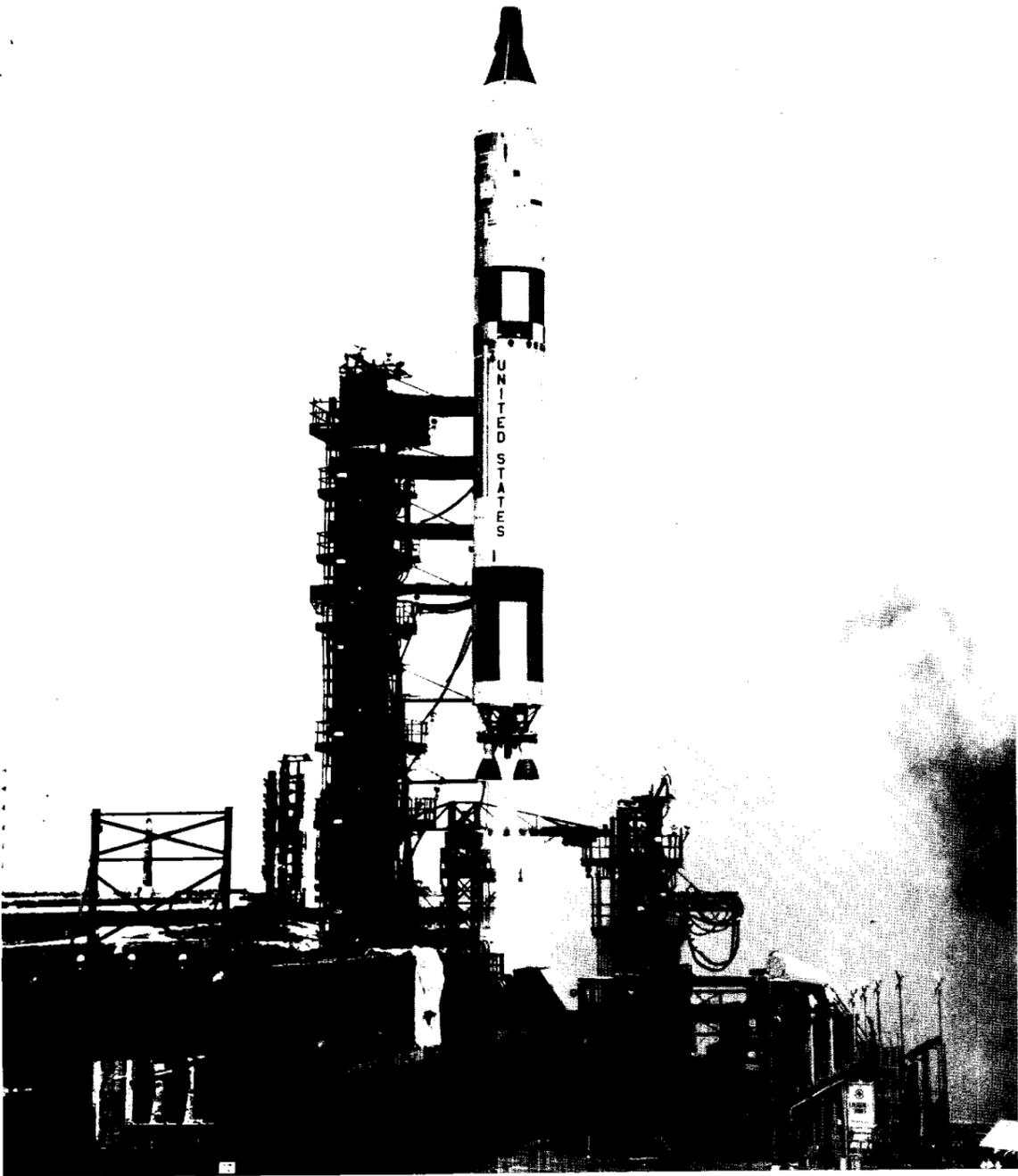
As the unmanned, partly instrumented Gemini spacecraft went into orbit it brought enthusiastic responses from all responsible for the successful launch.

Gemini Program Manager Charles W. Mathews said the flight gave the Gemini

team confidence to proceed toward a second unmanned flight and a manned orbital flight this year.

The second flight, set for late August or early September, is to hurl a Spacecraft on a ballistic flight to test all systems, atmos-

(Continued on page 3)



OFF TO A SUCCESSFUL ORBIT--In a roaring lift-off amidst billowing orange clouds of smoke the Gemini-Titan vehicle leaves the pad at Cape Kennedy.

Grissom, Young Named As Prime Gemini Crew

Virgil I. (Gus) Grissom and John W. Young were named Monday as the prime crew for the first manned Gemini spaceflight which is scheduled for sometime in November or December.

The backup crew for the first manned Gemini flight will be Walter M. Schirra Jr. and Thomas P. Stafford it was also announced.

The four astronauts were introduced to the press Monday morning by Dr.

Robert R. Gilruth, director, Manned Spacecraft Center, in the auditorium at the Clear Lake site.

During the question and answer period a reporter asked Grissom, "What do

(Continued on page 3)



VIRGIL I. (GUS) GRISSOM

JOHN W. YOUNG

SCHEDULED LAST MONDAY OF EACH MONTH -

Dr. Gilruth Institutes Monthly Technical Symposium For MSC

The first regularly scheduled Manned Spacecraft Center Technical Symposium will be held in the Auditorium Bldg. 1, Monday, April 27, from 6 to 8 p. m., it was announced by Dr. Robert R. Gilruth, director.

A buffet dinner will be served in the MSC Cafeteria from 5 to 6 p. m., preceding the meetings which will be held on the last Monday of each month.

Dr. Gilruth cited the following benefits that will ac-

crue as a result of these regularly scheduled meetings: give all key personnel in the Center an opportunity to become acquainted with the various technical studies and programs in progress at MSC; encourage the informal exchange of technical information, ideas, and/or comments; and facilitate dissemination of results of pertinent technical studies conducted by activities outside of MSC.

Introductory remarks by Dr. Gilruth will open the

first meeting and Maxime A. Faget, Assistant Director for Engineering Development will serve as chairman.

The following subjects will be presented on the first program.

1. Development of a Throttleable Hybrid Propulsion System by C. Harold Lambert, Propulsion and Energy Systems Division.

2. Parasail Landing System Development by Robert B. West, Structures and Mechanics Division.

3. Gemini Mission Simulator by Stanley Faber, Flight Crew Support Division.

4. Review of the Gemini GT-1 Flight by Scott H. Simpkinson, Gemini Program Office.

Those attending the symposiums are expected to be the Center's technical personnel at and above the level of section head with a few additional selected individuals from the administrative areas. Depending on the subject matter of in-

dividual meetings, some additional specialists will be invited.

Warren Gillespie Jr. of the Office of the Assistant Director for Engineering and Development will be the meeting manager. He will be responsible for making all arrangements for the symposiums. Questions relating thereto should be referred to him.

Each division is requested to transmit a list of the at-

(Continued on page 3)

Astronauts Shepard, Borman Try Out Gemini Simulator At Cape Kennedy



GETTING THE FEEL—Frank Borman gets the feel of the Gemini Mission Simulator.

Astronauts Alan B. Shepard Jr., America's first man in space, and Frank Borman gave reporters a close look at what it's like in the Gemini spacecraft last week at Cape Kennedy as they settled into a two-man simulator in which they are eventually going to spend a lot of time.

The simulator interior is an exact duplicate of the type that will carry the next astronauts into space.

Shepard and Borman spent about three-quarters of an hour talking to reporters in the Gemini mission simulator which is a copy of the one that is now being checked out in St. Louis at

the McDonnell Aircraft Co.

When the checkout is completed in St. Louis, the simulator will be moved to the Manned Spacecraft Center.

Some of the astronauts will begin training in the simulator at Cape Kennedy and the one in St. Louis soon.

Shepard told reporters that some of the astronauts have spent short periods in the simulator at Cape Kennedy but "have not tried any specific mission."

The simulator at Cape Kennedy will be unique in that, beside training for specific space missions, it can also communicate with the world-wide ground control and tracking stations.

Local ARCS Group To Hear Talk By Dr. Edward Teller

A research scientist who was chiefly responsible for the development of the Hydrogen bomb, Dr. Edward Teller, Lawrence Radiation Laboratory, University of California, will address a benefit coffee for the Houston chapter of the ARCS Foundation, Inc., at 10:30 a. m., April 27, in the Crystal Room of the Rice Hotel.

Dr. Teller will have as his subject, "The Education of the Modern Inventor."

ARCS (Achievement Rewards for College Scientists) Foundation, Inc., is an organization of women devoted to providing scholarship funds for students excelling in scientific and technological fields, at both graduate and undergraduate levels, contributing in a meaningful way to the advancement of science, peace and the welfare of man.

The coffee is open to all

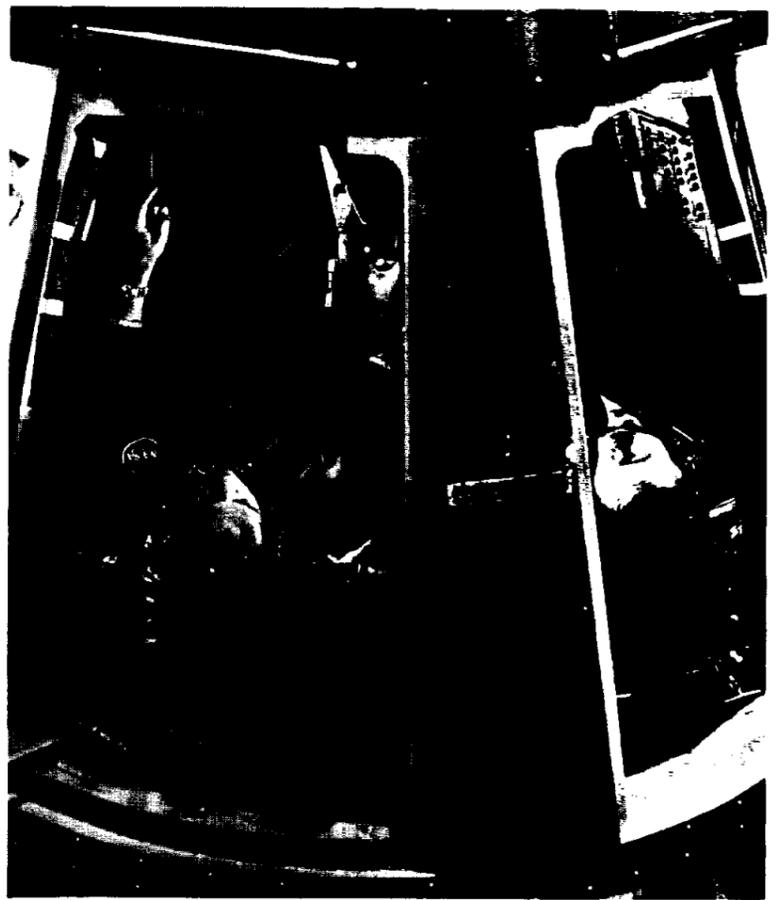
interested parties and a special invitation is extended by the local ARCS chapter to MSC employees and families. Tickets are \$2.50 per person and MSC employees may obtain tickets from Grace Winn, by calling HU 3-4431.

President of the local chapter is Mrs. Alan B. Shepard.

The Houston chapter of ARCS was the second to be organized. The organization was founded in Los Angeles in 1958 and has provided about \$100,000 for scientific scholarships.



FIRST TICKET SALES—Dr. Robert R. Gilruth, director, MSC, buys the first tickets sold for the benefit coffee of the ARCS Foundation, Inc., April 27. Dr. Edward Teller, will address the gathering. Mrs. Alan Shepard (left), president of the Houston chapter and Mrs. Al Chop, vice president make the sale to Dr. Gilruth.



GEMINI SIMULATOR—Alan Shepard lies on the left hand couch of the Gemini Mission Simulator at Cape Kennedy, the position of the command pilot in a Gemini flight. Just inches away in the right hand couch is Frank Borman.

Lunar Landing Research Vehicle To Undergo Tests

The first of two Lunar Landing Research Vehicles (LLRV) built for the Manned Spacecraft Center by Bell Aerosystems Company in Buffalo, New York was completed last week.

Resembling an oversized spider, the vehicle will soon be delivered to the National Aeronautics and Space Administration's Flight Research Center at Edwards, Calif. A second unit will follow.

The lunar landing research program is in direct support of Project Apollo, the space program designed to land two men on the moon.

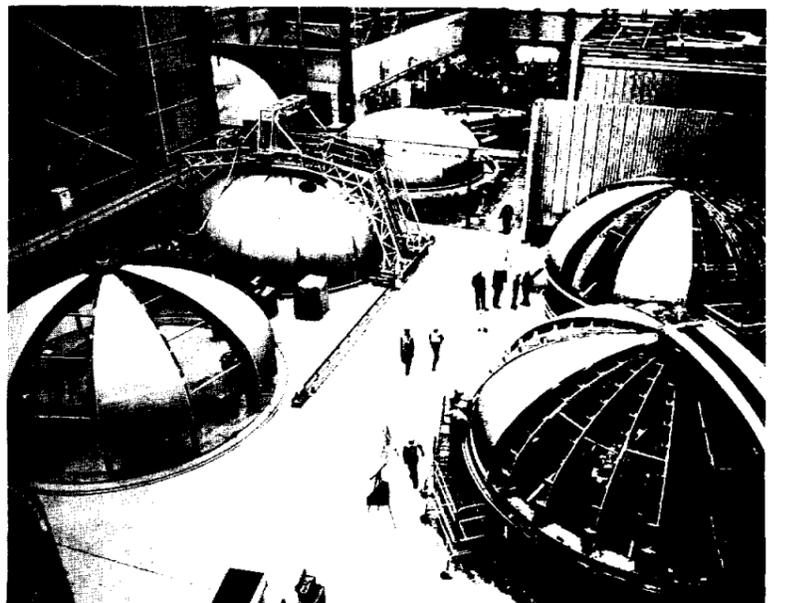
LLRV will have the three-fold purpose of exploring problems associated with lunar landing, providing data to aid in design of the Lunar Excursion Module (LEM), which actually will land on the moon; and training astronauts in the correct procedure of approach, hover and touchdown on the surface of the moon.

The research vehicle is slightly more than 10 feet high. It has four welded aluminum alloy truss legs with a spread of 13 feet, four inches. The legs support a glass-covered crew compartment. The vehicle will weigh about 3,600 pounds when loaded with fuel and instruments.

A turbofan engine and hydrogen peroxide rockets provide the thrust which enables the vehicle to take off; hover and then descend to earth in simulated lunar landings.



LUNAR LANDER—Artist's concept of lunar landing research vehicle under study by NASA.



SPACE HARDWARE—Resembling giant beanie caps, two futuristic domes (left rear) are completed propellant "bulkheads" for the Saturn V Apollo moon-landing rocket's second stage in production at North American's Space Division, Downey, Calif. Bulkheads are partitions that bottle up, insulate and separate space propellants that will power the launch vehicle. The second stage (called the S-II) is being developed by North American for NASA's Marshall Space Flight Center, Huntsville, Ala.

Gemini

(Continued from page 1)

pheric re-entry and recovery.

Lift-off of the Gemini Launch vehicle was only one second behind schedule, but a launching official claimed the range clock must have been wrong because the countdown was completed without even a one second delay.

The countdown started at 6 a. m. EST as planned.

High thin transparent clouds with a few puffy clouds were in the sky with winds of about 12-16 knots and the temperature around 80 degrees.

Lowering of the erector began at about 35 minutes to launch and observation aircraft around the area, some cutting contrails and others low enough to be seen, were there to observe the maiden flight of Gemini.

While the sleek black and white vehicle waited out the countdown, off to the right quietly loomed the pad 14 gantry from which the Mercury orbital pilots flew... the last flight, that of Cooper just 11 months prior.

It all began precisely as scheduled when at 11 a. m. EST billowing orange smoke belched from beneath the Titan.

Three seconds later, the Titan lifted the spacecraft, slowly at first, then as acceleration increased, a liquid appearing flame trailed after the rocket. Smoke from the flame formed a perfect V beneath the rocket.

A rolling type roar (the noise was louder than the Atlas) that continued as the Gemini-Titan ascended, reached the press viewing site almost two miles away.

Paul Haney, MSC public affairs officer, announced four minutes and 30 seconds after launch, "Everything looks good, couldn't be better."

He made this statement as the spacecraft zoomed over Bermuda. Seconds later, Haney reported from the Mission Control Center,

"It looks clean and green."

At six minutes after launch word came that "Walt Williams just announced we have an orbit." Two minutes later Haney reported, "This mission couldn't look greener."

He was back three minutes later to tell some 100 reporters and photographers that Williams exclaimed, "This is a beaut."

Shortly after the successful launch, Williams told reporters that the high point (apogee) of the elliptical orbit was 204 statute miles and that the lowpoint (perigee) was 99.6 statute miles, with an orbit time of 89.27 minutes.

All systems, Williams said, were functioning "well within manned tolerances."

The world-wide tracking network was functioning "very well", Williams said.

The plan now is to send an instrumented, unmanned Gemini spacecraft into a ballistic path about 2000 miles from Cape Kennedy into the Atlantic in August

or early September. That spacecraft, unlike the one flown last Wednesday, will be recovered.

An expected life of 3.5 days for the first Gemini, plus or minus one day, was predicted.

The only imperfection in the flight last Wednesday was a 14-mile-an-hour excess speed by the Titan II. It reached 17,534 miles an hour instead of the intended 17,520. This sent the spacecraft into a 204-mile-high peak orbital path, 21 miles higher than planned.

Williams said this was well within tolerance and that on a manned flight, extra height easily could be corrected by the astronauts.

After the suborbital launch of the second Gemini, a manned mission with two astronauts aboard will be attempted in November or December.

William B. Bergen, president of the Martin Co., said shortly after the launch, "As an engineer, this was

Gemini Crew

(Continued from page 1)

you consider to be the hairiest part of the flight?"

Grissom replied with this gem, "The part between the liftoff and the landing."

Grissom, 38, was the second American in space when he piloted his Liberty Bell 7 spacecraft on a sub-orbital flight down the Atlantic range on July 21, 1961.

Young, 33, is a member remarkable to me. Not one hold, it all went so well."

One of the country's newest astronauts, Richard Gordon, said shortly after the launch, "The only thing wrong with this one is that we haven't got a crew in it."

Williams told reporters that this successful launch "marks a milestone in the Gemini program and illustrates again the importance of America's space team, NASA, the Air Force and industry."

He told reporters that it would be some time before the information gathered from instruments aboard the spacecraft could be analyzed. These instruments measured heat, vibration, and pressure.

On this flight, the second stage that powered the spacecraft into orbit remained connected to it. During a manned flight, the second stage would fall away from the spacecraft after burnout.

Williams, who directed all six manned flight in Project Mercury, bowed out of NASA with last Wednesday's launching. He recently accepted a position with the Aerospace Corp.

of the second group of nine astronauts that entered the space program on September 17, 1962.

Schirra, 41, was the third American to orbit the earth when he made his six-orbital flight in his Sigma 7 spacecraft on October 3, 1962.

Stafford, 33, was also a member of the second group of astronauts entering the space program.



WALTER M. SCHIRRA JR.



THOMAS P. STAFFORD



MISSION CONTROL CENTER--During a critical moment of the GT-1 mission are (l. to r.) Christopher C. Kraft Jr., Walter C. Williams, and John D. Hodge.



BLOCKHOUSE--Scene in the Blockhouse at Cape Kennedy during the GT-1 mission shows Paul Donnelly, chief test conductor for MSC-Florida Operations and the NASA test conductor for the GT-1 mission.

Symposium

(Continued from page 1)

tendees to Gillespie by April 20. The list should designate each person who will eat dinner at the Cafeteria preceding the symposium.

Admission to the symposium will require a security clearance at the confidential level.

The symposiums will consist of presentations made by MSC personnel, interspersed with occasional guest speakers from industry and educational institutions.

Normal attendance at the meeting should be about 350 persons.

Industry Public Relations Conference Scheduled April 22-23 In Auditorium

An Industry Information Procedures Conference for all contractors involved in the Gemini and Apollo programs has been scheduled for April 22-23 in the auditorium at the Manned Spacecraft Center.

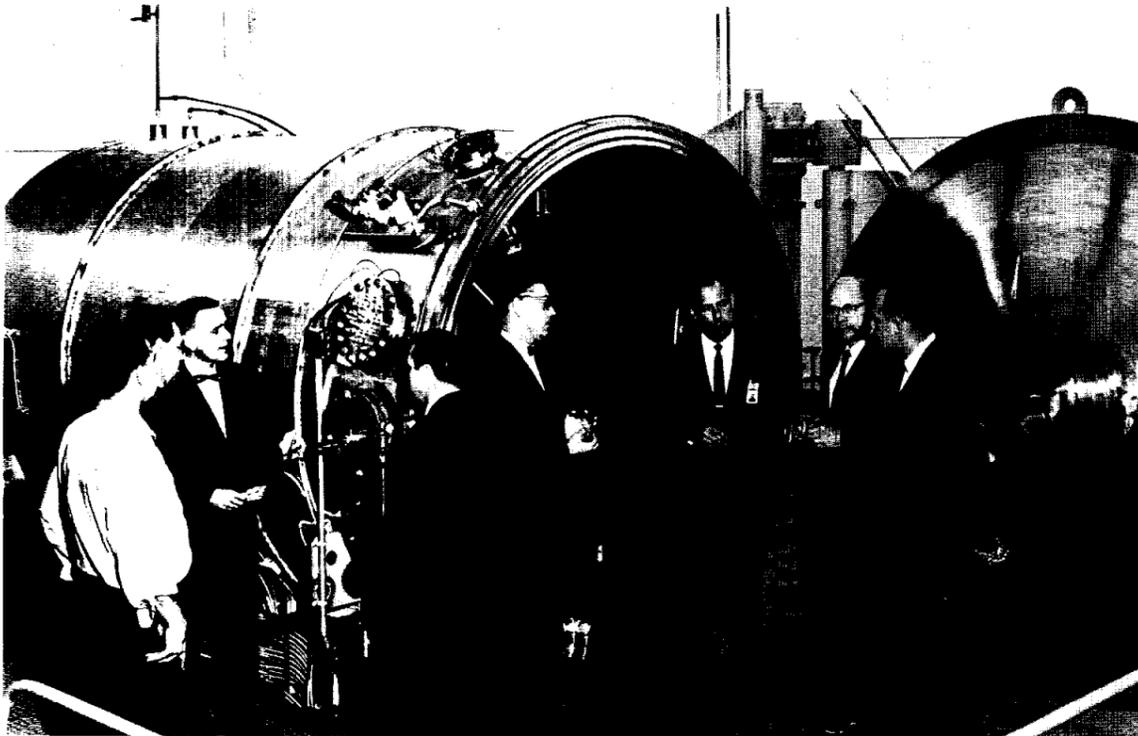
A panel discussion period is scheduled for the second day with members of the local and national press, radio and TV serving as panelists. Included on the panel will be Jules Bergman, science editor for ABC; Robert Hotz, editor, Aviation Week; Alvin B. Webb Jr., chief, Space Flight Bureau UPI; and Dan Cobb, news editor, Houston Chronicle.

Purpose of the conference is to keep industry public relations and advertising people current on the MSC information policies and motivation of contractor employees, as well as bringing them up to date on the current status of Gemini, Apollo and Saturn programs.

The industry people will be welcomed by MSC officials and given a tour of the Clear Lake facilities early on their first day

here.

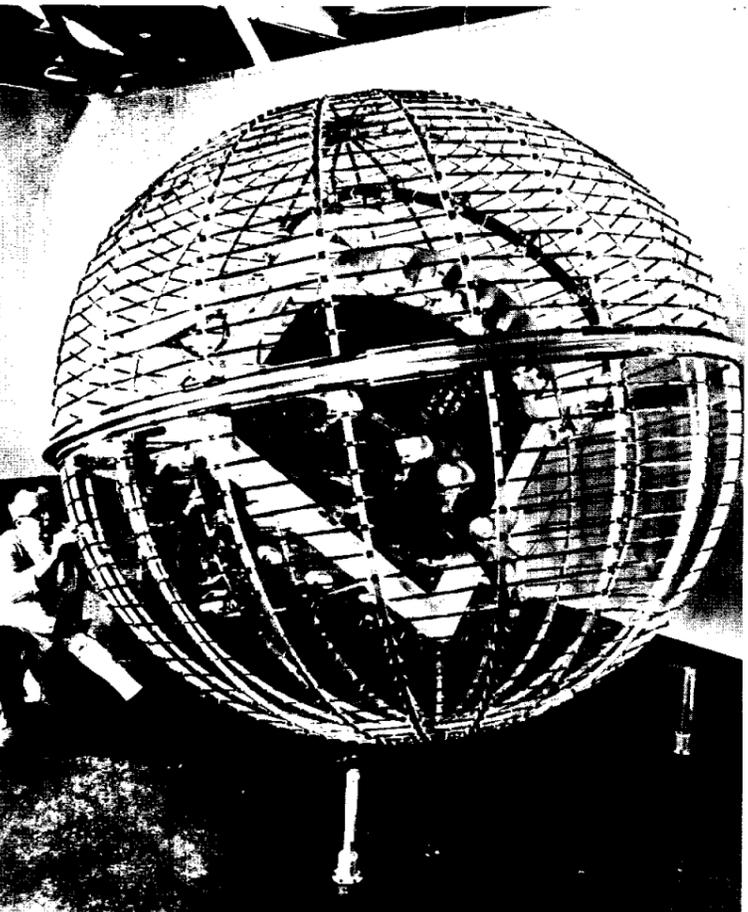
Reports to be delivered to the group will be given by Charles W. Mathews, manager, Gemini Program Office, and Andre J. Meyer Jr., chief, Office of Project Administration, Gemini Program Office; Joseph F. Shea, manager, Apollo Spacecraft Program Office; A Marshall Space Flight Center representative will report on the Saturn development; W. E. Stoney Jr., chief, Advanced Spacecraft Technology Division on studies for future manned space flight missions; Donald K. Slayton, Assistant Director for Flight Crew Operations, will present guidelines to follow during astronauts visits to industrial facilities; and members of the Public Affairs Office of MSFC and MSC will present various reports to the group along with representatives of other MSC divisions.



MSC TEST CHAMBER—This RCA built vacuum chamber for testing of spacecraft components and sub-systems was recently installed at Ellington AFB.



RANGER'S EYES — When the next Ranger spacecraft is launched toward the moon, it will carry six television "eyes" designed to send back the first close-up pictures of the lunar surface. The camera system was designed for NASA by RCA.



TIROS — An engineer with RCA takes a test reading of magnetic effect upon the TIROS within wired "cage", preparatory to rotating the satellite on its mount for study of the stabilization system. The spherical "cage" was designed to produce magnetic fields resembling those of earth.



BRIG. GEN. DAVID SARNOFF
chairman of the Board of Directors, Radio Corporation of America.



ARTHUR L. MALCARNEY
group executive vice president
Radio Corporation of America.



WALTER G. BAIN
vice president, Defense Electronic Products, Radio Corporation of America.

RCA's Contribution 1

One of the nation's most active and versatile organizations pioneering in space programs for the National Aeronautics and Space Administration - including major roles in the manned spaceflight program - is the Radio Corporation of America.

For the manned spaceflight program, RCA is providing:

- Tape recorders and telemetry transmitters for use in the Gemini spacecraft.

- The radar and communications subsystems for the Lunar Excursion Module (LEM).

- Apollo Command Module TV system.

- The solar simulators for MSC's environmental test chambers "A" & "B".

- Saturn I computer-based checkout system and associated displays.

- Ground-based radars for the Manned Spaceflight Tracking Network.

The equipment RCA is supplying for Gemini is characterized by its small size, weight and power requirement. The Gemini recorder is only nine inches square, five inches high and weighs 12 pounds. This unit can record data continuously for four hours and play it back to ground stations in only eleven minutes. The Gemini telemetry transmitter is all solid-state, weighs 32 ounces and has a volume of only 36 cubic inches. These units are being built by

RCA's Communications Systems Division, Camden, N.J., for Electro-Mechanical Research, Inc., subcontractor to McDonnell Aircraft Corporation.

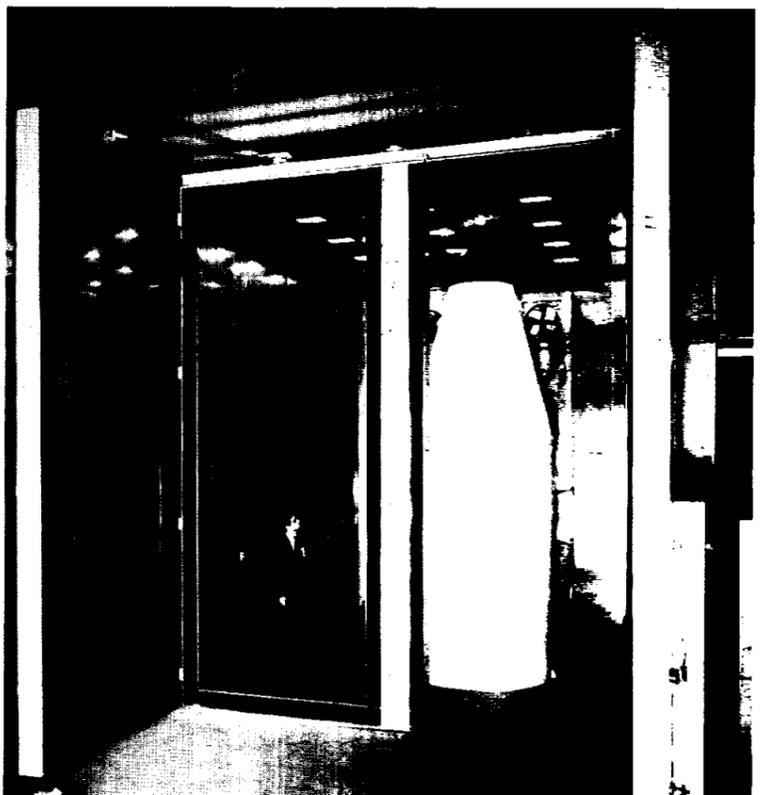
In the Apollo program, RCA has been assigned by NASA's prime contractor for LEM, the Grumman Aircraft Engineering Corporation, to build a number of the key electric subsystems for the moon-landing vehicle.

These include subsystems for radar, communications, in-flight test, ground support, portions of the stabilization and control system. Headquarters for RCA's LEM work is at the company's Aerospace Systems Division, Burlington, Mass.

The LEM radar sensor subsystem, consisting of light-weight, solid-state equipment, will provide information on velocity, distance, and angle necessary to effect a safe landing on the moon's surface. Then, upon completion of the exploratory work and the takeoff from the moon, it will provide the necessary information for a precise rendezvous with the orbiting Apollo spacecraft before the latter returns to earth.

The LEM communication subsystems will provide communications links between LEM and the earth, between LEM and lunar orbiting Command Module from which LEM will des-

EDITOR'S NOTE: This is the twenty-fifth in a series of articles designed to acquaint MSC personnel with the Center's industrial family, the contractors who make MSC spacecraft, their launch vehicles and associated equipment. The material on these two pages was furnished by the Department of Information, Radio Corporation of America.



HUMIDITY CHAMBER — This Thermal Humidity Chamber at RCA's Princeton, N. J. plant is for use in the checkout of the LEM's communications and radar systems. The nose cone of a TIROS is shown in the chamber.

Walt Williams Honored By Friends Here, Florida

More than 400 friends of the Walter C. Williams attended the MSC farewell party for Williams Saturday night at Paul Barkley's

will look to your right, coming down the stairs is a lady who came all the way from Raleigh, North Carolina, to be here tonight -

coming him out" of the space agency's manned space flight area into his new role as vice president of Aerospace where he will deal in similar projects but of a less operational nature. The dinner party was sponsored by the McDonnell-NASA Mercury Social Club.

This gathering was also attended by over 400 persons, many of them attendees of both parties.

During the party at the Cape, Williams was presented with the chair he occupied in the control center--formerly known as Mercury Control Center. Most of his colleagues say he spent more time on his feet than in the chair.

In accepting the gift, Williams acknowledged that the chair had been purchased from the government.



GIFT FROM WELL-WISHERS -- Dr. Robert R. Gilruth presents Walt Williams (left) with a gift of fishing gear in behalf of those attending the party given for Williams.

Sterling Mansion on Galveston Bay. Those attending included a number of out-of-town guests, prominent Houstonians, and MSC personnel who had worked side-by-side with Williams during Project Mercury and through the first Gemini flight.

Midway through the affair, Paul Hancy, serving as master of ceremonies, finally achieved a victory in getting the attention of the huge gathering. He announced there were a number of VIPs present and would like to acknowledge a few. He said, "Walt, if you

your mother."

Alan Shepard read a citation, making Williams an honorary astronaut; and Chris Kraft, Flight Operations Director, played and then presented Williams with a tape containing best wishes from all the stations on the tracking network.

MSC Director Robert R. Gilruth was introduced and spent a few minutes reviewing the part that Williams had played in NACA and NASA programs during the past 23 years.

At the conclusion of his remarks, Gilruth presented Williams with some mementos from his friends. These included a specially prepared set of cuff links and tie clasp, made basically of part of the skin of the Atlas 109-D booster which launched John Glenn into space. A part of that booster survived the re-entry and was retrieved in South Africa.

Entertainment was offered by a 13-piece band which provided music for listening and dancing.

Just a week before in Indianantic, Fla. a similar farewell party was held for Williams by friends "wel-



FRIENDS AND ADMIRERS—Walter Williams, his wife and mother greet friends and admirers at the party last Saturday night.



CAPE KENNEDY PARTY -- Walter Williams is seated in the chair from the control center which was presented to him as a going away gift by friends and associates. The chair, purchased from the government, was given Williams at a party in his honor. Standing (l. to r.) are Donald K. Slayton, G. Merritt Preston, L. Gordon Cooper, John Yardley, Christopher C. Kraft Jr., and Colonel Cobb.



ICETRONAUT—Carved from a block of ice, the ice astronaut commanded a lot of attention at the Williams party last Saturday.

Bridge Group Meets Elects Officers; Next Play April 28

The recently organized MSC Duplicate Bridge Club held a meeting March 31 in the Ellington NCO Club to elect officers.

Results of the election were; LaRue Burbank, president; Evelyn L. Hugar, secretary; Thomas E. Holt, treasurer; Lorrain R. Remmich, publicity chairman, and Harold E. Granger, property custodian.

The next session of the club is scheduled for 7:15 p. m., April 28 at the Ellington AFB Officers Open Mess.

Top Winners of the last session were: North-South, Mr. and Mrs. Wayne Brewer; East-West, Sharon Raney and Bill Puderbaugh.

MSC Judo Club Offers Lessons To All

Anyone with MSC interested in learning the art of self-defense, via the sport of Judo, may join a group at the center which meets for this purpose.

A Judo club, with MSC people as the nucleus, has

been meeting in Houston for the past one and one-half years.

The club is open to both sexes, old and young, and interested parties may call Don Bray, Ext. 3595 for additional information.

EAA Ice Skating Party Set

An ice skating party for teen-agers of MSC employees and their guests has been scheduled from 6 to 8 p. m., Sunday, April 26 by the MSC Employees Activities Association (EAA).

Admission charge of \$1 per person will include

skate rental, hamburgers, soft drinks, doughnuts and ice cream. Tickets are available from EAA General Assembly members.

The party will meet in the Gulfgate parking lot near Weingarten's at 5:15 p. m. prior to departing in busses for the Winterland Ice Rink in Houston. The party will return to Gulfgate at about 8:45 p. m.

Knowing how to ice skate is not necessary, an EAA member said, some of the adults making the trip have never been on ice skates before, and others look like they never have.



HONORARY ASTRONAUT -- Walter Williams becomes an honorary astronaut as Astronaut Alan B. Shepard Jr. presents him with framed proclamation declaring him to be such.

Invitation Issued To Joiners By MSC's 17 Social Clubs

An invitation to employees to join one or more of the 17 functioning social clubs at MSC has been extended by H. M. (Merv) Hughes, chairman of the EAA Executive Board, Arts and Crafts Committee.

All any MSC employee

need do to join one of the following clubs is to call the person listed. If you do not find a club that meets your needs or desires and would like to initiate other club activities or obtain more information on the clubs listed, call Hughes at Ext. 32921.

CLUB	CONTACT	TELEPHONE NO.
Archery	Karl Kotilla	7633
Barber Shop Quartets	Bill Drewes	WA 8-2811, 6331
Bridge - Duplicate	LaRue Burbank	WA 8-2811, 3311
Bridge - Party	Stig Ekeroot	35425
Camera	Robert L. Jones	7695
Chess	Maynard Weidman	32131
Dance	Harold Toy	37726
Flying	Bill Kuykendall	WA 8-2811, 6321
Folk Song	Ken Cashion	7677
Great Books	Marvin Matthews	33121
Ham Radio	Leroy Ruetz	WA 8-2811, 3734
Judo	Don Bray	WA 8-2811, 3595
Language Classes	Merv Hughes	32921
Rod & Gun	David Bell	34771
Sailing	Jerry Grayson	35571
Scuba Diving	Walley Graves	35411
Water Skiing	Hugh Scott	32158



20-YEAR AWARDS--Dave W. Lang left, chief, Procurement and Contracts Division, recently presented awards for 20 years of government service to (l. to r.) Leon A. Kister, James W. Epperly, and William G. Allison.

Fair Reservation Deadline Extended

The deadline for making reservations for the World Fair trip has been extended from April 15 to April 24.

Reservations should be accompanied by a \$25 deposit for each person going

on the trip and the final payment must be made 30 days prior to the June 13 departure date.

World Fair reservations and deposits should be made with Mary Sylvia, Ext. 33958.

Sailplane Pilots Invited To Join Club

A Soaring Club has recently been formed with operations at Clover Field (Friendswood). The club at present has 15 members and owns a Schweizer 2-22 sailplane.

Plans are immediate to acquire an additional high-performance sailplane. Membership in the club is presently limited to licensed pilots (power or glider). Initiation fee is \$200 and monthly dues are \$3.

For more information contact Tom Clinton, HU3-3421, or Jack Hartung, HU3-3341.

Scuba Diving Course Offered MSC Employees

The organization of the MSC EAA Diving Club will begin with a course of Self-Contained Underwater Breathing Apparatus (SCUBA) instruction.

Course will be primarily for persons with limited diving experience, but all interested MSC employees, their families and personal guests are invited.

Registration will be held at 7:00 p.m. on April 20, at the Tropicanna Swim Club, 5920 Telephone Road. This course will be instructed by Dick Holt, MSC, who is a qualified instructor. Participation will be limited to persons 16 years or older and will consist of both pool and lecture instruction.

Additional Club activities include plans for a Gulf charter dive in the near future. Formal organization of the Club and diving trips will be announced in the Roundup. Additional information may be obtained by calling Hugh Scott, HU3-2158 or Wally Graves, HU3-5411.

MSC

at work...



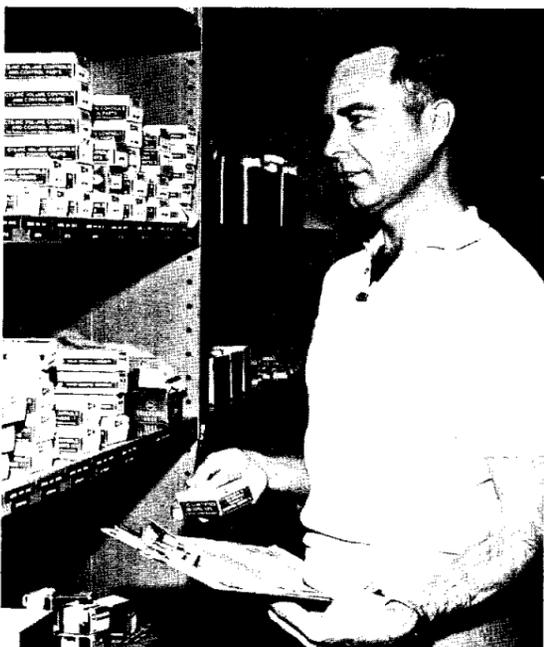
LYNNE JONES, illustrator, Graphic Services Branch, Office Services Division, titles color slides.



PEGGY CARLISLE, film assembler, Printing and Reproduction Branch, Office Services Division, strips imprints on negatives prior to printing.



CLOVIS N. SCOGIN, metal model maker, Machine and Assembly Branch, Technical Services Division, works on gyro test stand.



JOHN R. DAY, supply property custodian of the Instrumentation and Electronic Systems Division takes inventory of supplies.

MSC BOWLING ROUNDUP

MSC COUPLES LEAGUE

Standings as of April 7.

Team	Won	Lost
Ridgerunners	30 $\frac{1}{2}$	13 $\frac{1}{2}$
Lame Ducks	30 $\frac{1}{2}$	13 $\frac{1}{2}$
Spare-O's	23	21
Goofballs	21	23
Hackers	20 $\frac{1}{2}$	23 $\frac{1}{2}$
Bowlernauts	20	24
Schplitz	20	24
Four Aces	18 $\frac{1}{2}$	25 $\frac{1}{2}$
Shucks	18	26
Piddlers	18	26

High Game Women: C. Clyatt 215, 198, M. Jordon 191.

High Game Men: H. Maples 245, G. Sanders 223.

High Series Women: C. Clyatt 515, J. Sands 513.

High Series Men: H. Brasseaux 564, H. Maples 560.

MSC MEN'S LEAGUE

Standings as of April 2.

Team	Won	Lost
Turkeys	28	16
Pseudonauts	28	16
Lunar Lights	27	17
Overshoots	23	21
Tecnic	22	22
Spastics	22	22
Whirlwinds	20	24
Fizzlers	20	24
Asteroids	18	26
Cosmonuts	12	32

High Game: J. Garino 266, B. Harris 263.

High Series: J. Keggins 650, J. Strickland 621.

High Team Game: Tecnic 965, Turkeys 940.

High Team Series: Tecnic 2566, Spastics 2488.

MSC MIXED LEAGUE

Standings as of April 7.

Team	Won	Lost
Alley Oops**	77	35
Eight Balls**	72 $\frac{1}{2}$	39 $\frac{1}{2}$
Celestials	69	47
Snap Shots	68 $\frac{1}{2}$	47 $\frac{1}{2}$
Five Flushers	65 $\frac{1}{2}$	50 $\frac{1}{2}$
Pricers	63 $\frac{1}{2}$	52 $\frac{1}{2}$
Virginians	61	55
Little Splits	60 $\frac{1}{2}$	55 $\frac{1}{2}$
Space Mates	58	58
Hardly Ables	53 $\frac{1}{2}$	62 $\frac{1}{2}$
Aborts	50	66
Core Dumps	49	67
Gabs	33	83

**Postponed games

High Game Women: C. Barnes 213, 213, M. Lewis 211.

High Game Men: A. Farkas 246, B. Harris 240, Pavlosky 236.

High Series Women: C. Barnes 554, 545, 545.

High Series Men: P. Petersen 640, A. Chop 632, 606.

High Team Game: Alley Oops 984, 938, 930.

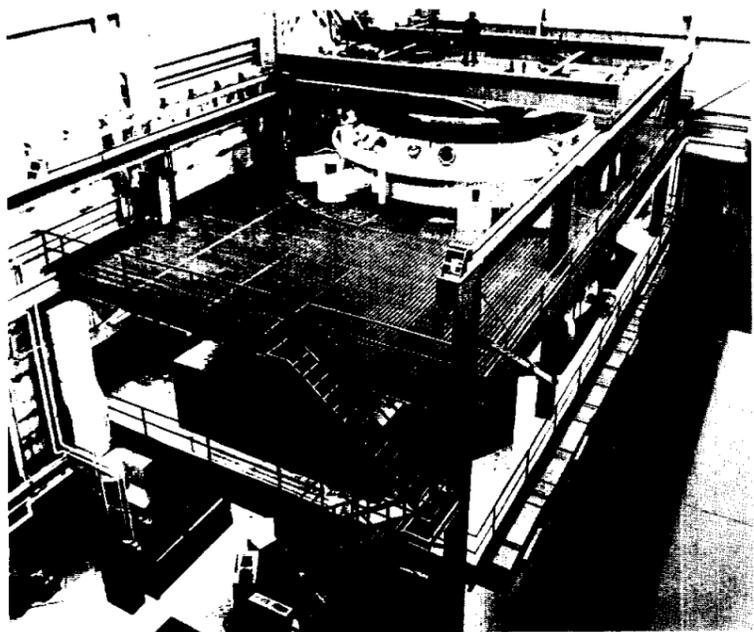
High Team Series: Alley Oops 2658, 2636, 2597.

NASA 5 PM MONDAY

Standings as of March 30.

Team	Won	Lost
Hot Shots	30	18
P & C Division	28	20
Alley Gators	27	21
Suppliers	25	23
Computers	23	25
Accounting	11	37

Manned Spaceflight Program Covers Many Areas



THERMAL-VACUUM CHAMBER -- This 24-foot diameter thermal vacuum chamber at RCA's Astro-Electronics Division, in Princeton, N. J., is capable accepting a full size LEM.

cent to the surface, and, after the landing is achieved, between LEM and the astronaut walking on the moon

Continuous voice and telemetry data will be sent to earth by the communications subsystem except while the LEM spacecraft is on the far side of the moon. Thanks to another capability of this subsystem, live television pictures can be relayed from the spacecraft and even from the moon's surface back to earth.

Frank J. Gardiner is program manager for LEM in RCA's Aerospace Systems Division.

Also, for Apollo, RCA's Astro-Electronics Division, Princeton, N. J. has delivered to North American Aviation, a four-and-a-half-pound hand carried television camera, a prototype of the pistol-like cameras which the Apollo astronauts will use to shoot scenes on their voyage to the moon.

Believed to be the world's first space-qualified camera with integrated circuitry, it will enable "real-time", or live, TV from space so that viewers on earth may watch the astro-

nauts move around and see lunar objects as the astronauts see them. The camera has fixed-focus lens and a zoom lens with viewfinder which can be interchanged and adjusted to varying light conditions.

Another major function of RCA is provision of eighty solar simulator modules for MSC's large environmental test chambers, scheduled to be completed late this year. Nineteen of the modules, each capable of radiating heat and light comparable to the rays of the sun, will be placed atop Chamber A, facing downward. Fifty-four others will be placed horizontally at the side, radiating an area 13 by 40 feet inside the chamber. Seven of the modules will be placed atop the smaller Chamber B.

Because of the modular construction, the radiation equipment can be adjusted to "turn the sun on" with as much or as little intensity as desired and over varying areas.

The solar simulators are now in production at Cherry Hill, N. J., by the RCA Service Company. David L. Swartz is project manager for the simulators, under direction of Harry Reese,

Jr., Manager, Nuclear and Scientific Services.

The RCA Service Company is working on other projects for NASA, including a vacuum chamber for testing of components and subsystems, just completed at Ellington AFB for MSC, and four smaller space chambers for various research purposes at Langley AFB in Virginia. The latest being a chamber to operate at 5 x 10 to the minus 13 millimeters of mercury.

The Saturn I ground computer system, virtually controls the launch of the giant booster. It consists of the RCA-110-A computer with peripheral equipment and multiple display systems. The displays accept, process and display to an operator data in either text or graphic form concerning the exercising and performance of the Saturn vehicle and its ground support system. The display system has a keyboard by which the operator in control can send commands to the computer and thence to the rocket itself. The Saturn I checkout system is built by RCA's Aerospace Systems Division at Van Nuys, Calif.

The RCA developed AN/FPS-16 radar tracker, is the workhorse of NASA's global manned spaceflight tracking network. This radar and the even more sophisticated AN/FPQ-6 radar are installed at worldwide locations of the network; over 50 of the AN/FPS-16's are now in use.

RCA also is engaged in projects preparatory to the manned moon flight. One is to provide the television camera payload for Ranger, intended to flash back to



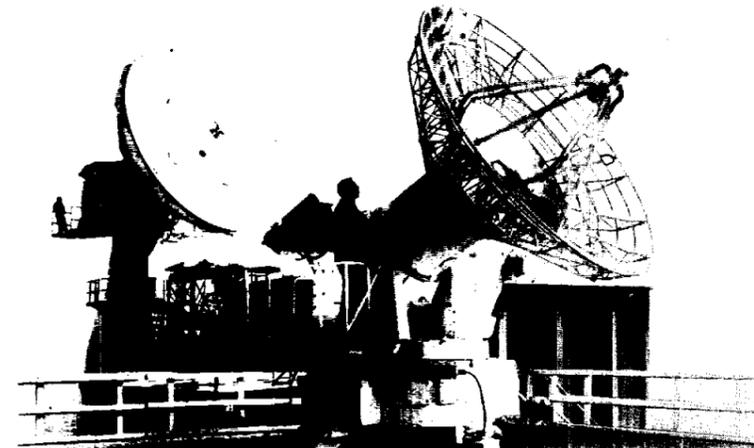
GEMINI RECORDER -- The Gemini tape recorder, built by RCA, is nine inches square, five inches high and weighs 12 pounds.

earth 3,000 pictures of the lunar surface as the spacecraft hurtles toward the moon at 6,000 miles an hour during its last 10 minutes of flight. In preparation for the next Ranger launch, NASA, JPL and RCA scientists are now studying telemetry data on Ranger VII to determine why, though the vehicle made a perfect impact on the moon early in February, its TV cameras failed to transmit the desired pictures; so far, the evidence points to a power loss through an unscheduled, premature switch-on early in the flight, possibly caused by un-anticipated atmospheric conditions.

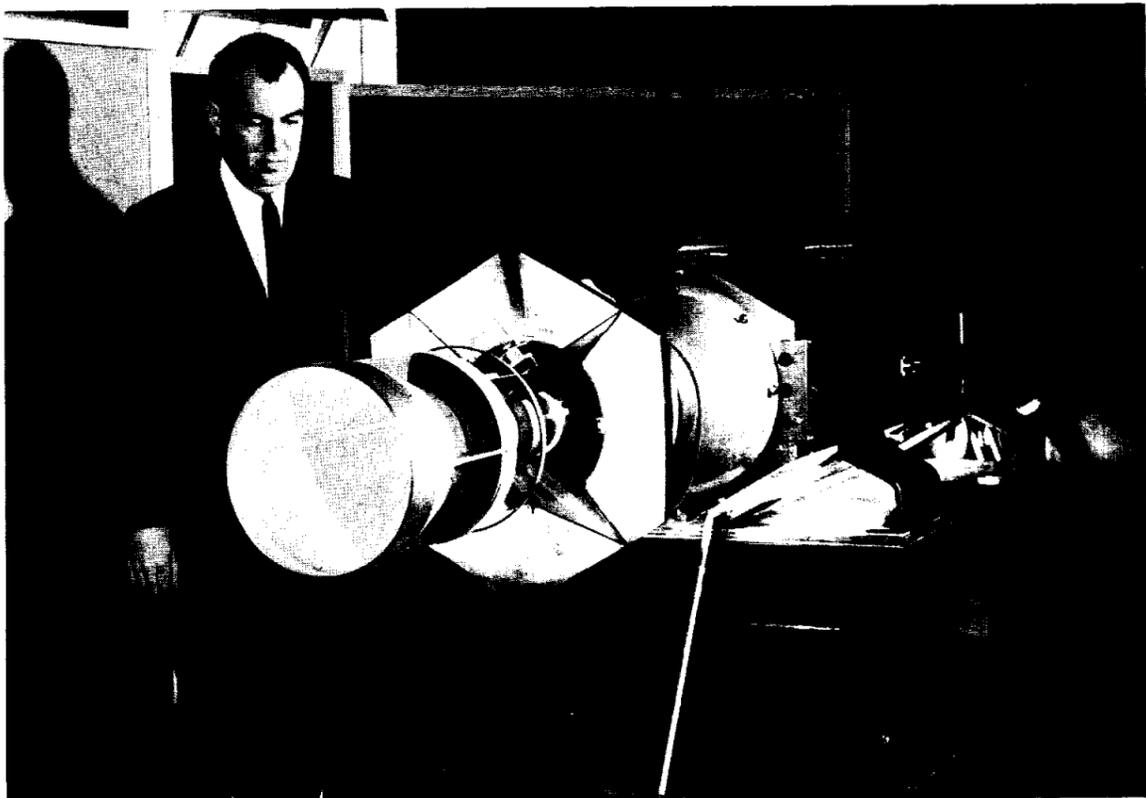
Also in preparation for

Apollo is NASA's Lunar Orbiting Capsule, scheduled for launch in 1966 to orbit the moon at an altitude of 22 nautical miles and send back pictures that would enable the mapping of the lunar surface. RCA is to provide the power supply and cameras capable of taking photographs of one-meter (39-inch) resolution. This, like the Ranger camera system, will be managed by the Astro-Electronics Division.

Aside from the manned spaceflight programs, RCA is engaged in these other programs for NASA: TIROS, RELAY, NIMBUS, SERT, STRATOSCOPE I and II, SCORE, ECHO I, and OGO.



PRECISION TRACKING RADAR -- The RCA-developed AN/FPQ-6 advanced precision tracking radar (left) has gone into service near Cape Kennedy. The AN/FPQ-6 has a 29-foot antenna and 32,000-mile range, compared to 12 feet and 5,000 miles for the AN/FPS-16 (right).

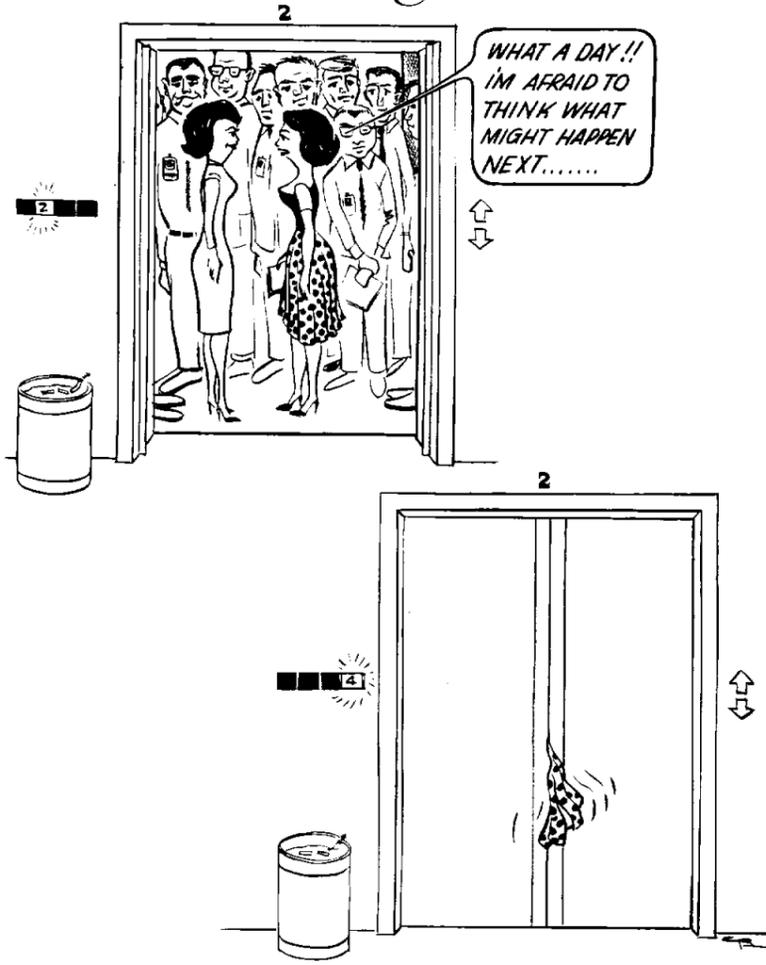


SOLAR SIMULATOR -- Harry Reese, manager of RCA Service Company's Nuclear and Scientific Services organization, stands beside a development module of the Solar Simulator to be used in MSC's environmental test chambers A and B.

The SPACE NEWS ROUNDUP, an official publication of the Manned Spacecraft Center, National Aeronautics and Space Administration, Houston, Texas, is published for MSC personnel by the Public Affairs Office.

Director Robert R. Gilruth
 Public Affairs Officer Paul Haney
 Chief, News Bureau Ben Gillespie
 Editor Milton E. Reim

On The Lighter Side



Waiting To See Mercury When Gemini Whizzed By

(EDITORS NOTE: The following appeared in the "Lighter Touch" column of Frank Johnson in the Nevada State Journal, March 24, 1964.)

We traveled to Carson City Sunday morning to view Astronaut L. Gordon Cooper's "Faith 7" Mercury space capsule, and we are a better family unit for it.

Adversity, hardship, hazards of every kind; together we met them and together we survived.

I do not mean to wax melodramatic, but it was bitter cold in Carson City Sunday, and the crowd waiting to see Faith 7 was simply HUGE.

The line waiting to look inside the history-making spacecraft, stretched three, four and five deep from the Capitol steps out through the front gate and down the sidewalk to the corner.

Amazing Comparison

As a result, anyone beginning at the back of the line and persevering to the front could boast he had spent more time negotiating a single Carson City block than it took Astronaut Cooper to go completely around the world.

It is a fact!

It is equally true that those of us waiting in line suffered more physical hardships than Cooper, though the mental strain was perhaps not so great.

After all, the astronaut was clad in an air conditioned space suit, while we were forced to brave wind, cold and occasional snow flurries in our street clothes.

Undeniably, there should be a medal of sorts for us civilian heroes. With oak leaf Clusters for those of us in our middle years who have spawned children better versed than ourselves in space technology.

There is nothing more nerve-racking than the effort to appear moderately intelligent when one's offspring are babbling about apogees and perigees and the maximum temperatures to which ablation shields are subjected during the re-entry period.

Conversation

"It is certainly amazing what wonderful advanced have been

WELCOME ABOARD

Thirty-six new employees joined the Manned Spacecraft Center during the period March 10 through March 29. Of this total, five were assigned to the MSC-Florida Operations, Cape Kennedy; three to the White Sands Missile Range in New Mexico; and one to the Bethpage, N. Y., Resident Office. The remaining 27 were assigned here in Houston.

SPACECRAFT TECHNOLOGY DIVISION: Carl B. Peterson.

CENTER MEDICAL OPERATIONS OFFICE: Glenn F. Kelley, and Lynda K. Richter.

ENGINEERING DIVISION: Walter J. Stork Jr., and Lynn A. York.

MSC-FLORIDA OPERATIONS (Cape Kennedy): John C. Miller, Robert P. Goodson, Ann C. Kellett, Lee R. Bridgeman, and Sharon A. Ausfahl.

TECHNICAL SERVICES DIVISION: William J. Lehman.

STRUCTURES AND MECHANICS DIVISION: Robert D. Filbert, and Paul E. Chuites.

TECHNICAL INFORMATION DIVISION: Miriam N. Williams, and Albert P. Bradley.

RECOVERY OPERATIONS DIVISION: Edward B. Petrush.

GEMINI PROGRAM OFFICE: Virginia S. Bottoms, and Marilyn E. Ricks.

PROCUREMENT AND CONTRACTS DIVISION: James W. Wilson Jr.

WHITE SANDS MISSILE RANGE (New Mexico): Gene F. Saylor, Ronald H. Sprenger, and Manuela A. Whitlock.

BUSINESS MANAGER RESIDENT OFFICE (Bethpage, N. Y.): Susan M. Moore.

INSTRUMENTATION AND ELECTRONIC SYSTEMS DIVISION: Thomas D. Jeffcoat, Marshall H. Walker, and William E. Mallary.

PROPULSION AND ENERGY SYSTEMS DIVISION:

made in our time," a dutiful parent will say to his eager child upon approaching the slightly blistered Faith 7.

"What do you mean by that?"

"Well, the concept of a vehicle so wonderful man has used it to venture into outer space."

"You're talking about the MERCURY capsule?"

"Naturally."

"Daddy-O, THAT'S an antique! We're in the age of Gemini and Apollo, not Mercury. Where have you been?"

Oh, no place. No place at all.

It's just that things must have changed during the time I was standing in line.

MSC PERSONALITY

Many Flight Operations Duties Fall To Sigurd A. Sjoberg

During mission periods and other occasions when the Assistant Director for Flight Operations is preoccupied, Sigurd A. Sjoberg has the responsibility for the continuing direction required to manage the directorate's activities.

This is only one of the duties that Sjoberg has as manager, Operations Planning and Development for the Assistant Director for Flight Operations.

Other duties include planning coordinating and exercising indirect management responsibilities in the many areas connected with the flights for projects Gemini and Apollo. He also serves as technical advisor and consultant to the Assistant Director for Flight Operations in areas pertaining to research and development in flight control, mission planning, and recovery operations.

Sjoberg joined NACA at the Langley Research Center in 1946 as an aeronautical research engineer. In October of 1959 he joined MSC as Operations Coordinator and in October of 1963 assumed his present duties.

He was born in Minneapolis, Minn., where he completed high school. In 1942 he was graduated from the University of Minnesota with a bachelor of aeronautical engineering degree.

Sjoberg has specialized in the fields of airplane stability and control, automatic stability and control

Eldon C. Currie.

FLIGHT CREWSUPPORT DIVISION: John A. Brown.

FLIGHT CONTROL DIVISION: William C. Young, Clyde E. Middleton, Joyce A. Martin, Beverly K. Duncan, and Ada W. Moon.

GUIDANCE AND CONTROL DIVISION: Sarah A. Wiegel.

LEGAL OFFICE: Fern L. Macha.

APOLLO SPACECRAFT PROGRAM OFFICE: Martha F. Yokum.

systems, and flight research. He has authored approximately 30 NACA and NASA reports.

His writings include an article on "Flight Control and Monitoring and Recovery", in Astronautics



SIGURD A. SJOBERG

and Aerospace Engineering, February 1963, and an Institute of Aeronautical Sciences Paper No. 59-134 entitled "Flying Qualities Associated with Several Type of Command Flight Control Systems."

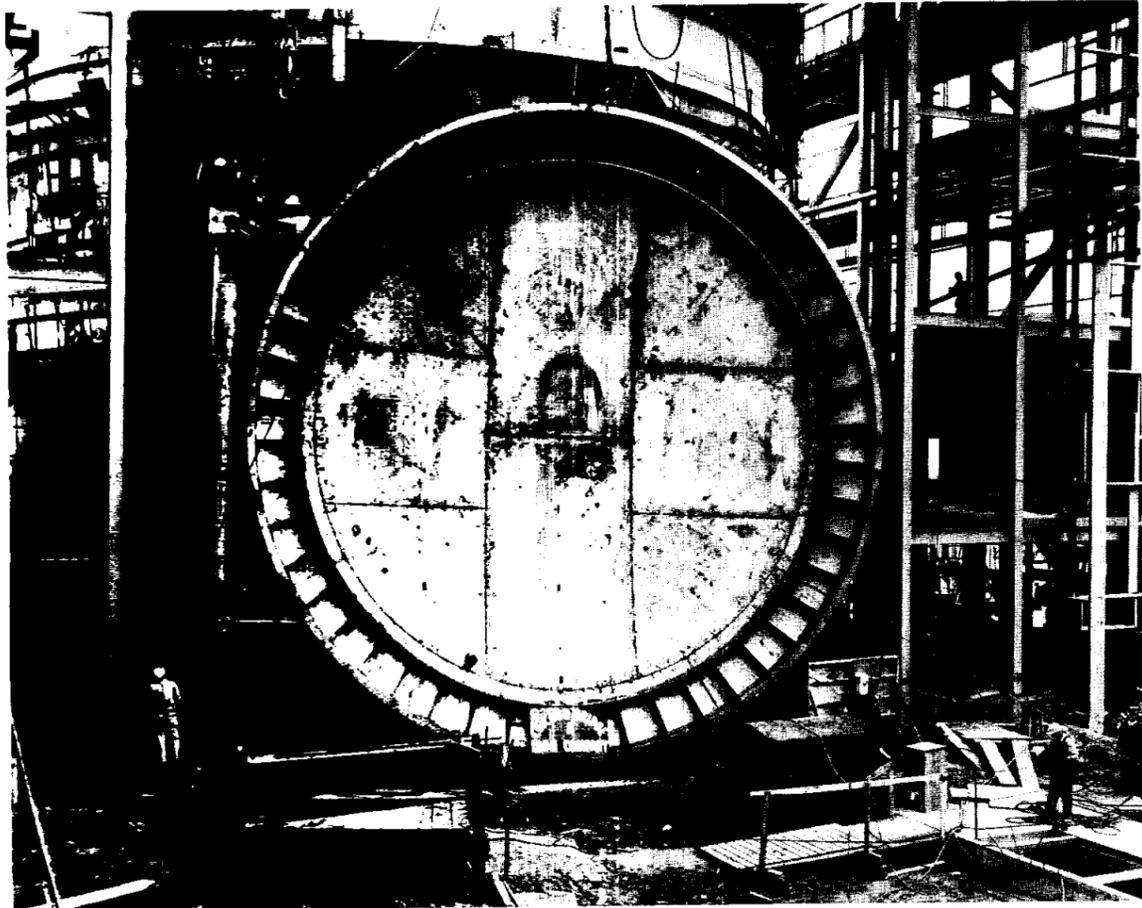
Sjoberg was test conductor of the Little Joe II and Apollo pad abort test operations at White Sands Missile Range (WSMR) in New Mexico from June of 1963 until completion of the tests in November 1963. In this capacity he took part in all matters concerning the planning, coordination and execution of Apollo test operations at WSMR.

He is married to the former Elizabeth Jane Ludwig. The couple has three sons, Eric 15, Stephen 13, and Robert 9, and the family resides in Timber Cove, Seabrook, Tex.

Sjoberg is a golfer when time permits.



INSPECTION TOUR--Dr. Robert R. Gilruth, director, Manned Spacecraft Center, points out buildings in the Center complex, from the window in his office on the ninth floor of the Project Management Building. Left to right are Lt. Gen. W. K. Wilson, chief of engineers, Department of Army, Washington, D. C., Dr. Gilruth, and Brig. Gen. C.H. Dunn, division engineer, U. S. Army Engineer Division, Ft. Worth. This was the second inspection tour of the site by General Wilson since construction began.



GIANT DOOR to Chamber "A", 38 feet in diameter and weighing 62 tons, is secured in place by steel workers. With the addition of the door, the 117 foot deep space chamber is enclosed.

Giant 62-Ton Door Placed On Lunar Simulation Chamber

The 62 ton, 38 foot diameter stainless steel door for Chamber A in the Space Environmental Simulation Laboratory was swung into place this past week to finished enclosing the large test facility at the Manned Spacecraft Center.

The larger Chamber A along with Chamber B is part of a mammoth building that will soon be able to simulate lunar trips with almost as much realism and detail as an actual flight.

Chamber A is tubular in shape, 117 feet tall and 65 feet in diameter and extends 24 feet into the ground. It was capped recently with two sections which weighed together over 100 tons.

The smaller Chamber B is 42 feet tall and has a 35-foot diameter. It will be ready for tests this fall.

Heat and cold manufacturing units will achieve temperature differences within both chambers ranging from 240 degrees (F.) above zero to over 400 below zero. A turntable which produces the effect of tumbling in space, has a capability of rotating 180 degrees. Pumping equipment will have the capability of creating a vacuum equivalent to 75 miles from earth's surface.

The inside of the chamber will be painted black. Along the top and sides are solar radiation units which meteorites is helpful in determining their physical properties and mineralogy.

will beam rays similar to the sun into the chamber.

Both chambers are being built so that man can per-



CHAMBER "A" door is lowered in place by giant overhead derrick and boom.

form tasks while subjected to conditions as nearly like outer space as possible.

The simulation laboratory consists of four buildings. There is an administration wing, refrigeration wing, a pumping wing and the high bay area containing the chambers and labs. The high bay area is 261 feet long, 81 feet wide, and 115 feet tall. It is the equivalent of eleven stories and will be one of the taller structures at the Center.

Total value of construction and equipment for the simulation laboratory is \$41 million. Of this \$14,756,777 has been paid to contractors through March 15.

Recent Texas Meteorite Donated To MSC For Study

A chunk of outer space which slammed into a Texas farm more than two years ago has finally found its way to the Manned Spacecraft Center.

The Bernard W. Neepers said the suspected meteorite was found on their farmland north of Sweetwater about two years ago. Theirs was the first meteorite ever reported from Fisher County, Tex.

The couple turned the four-pound specimen over to Manned Spacecraft Cen-

ter geologists after reading that MSC experts at the Lunar Surface Technology Branch are seeking natural space objects for examination.

Experts identified the Neeper Meteorite as a stoney meteorite, probably from the asteroid belt out between the planets, or from a "meteorite shower" left in the wake of a comet which crossed the earth's orbital path.

The Neeper's specimen has a dark brown fusion

crust where it was partially melted upon entering the earth's atmosphere, and is mostly dark brown to black stone, with about 15 percent nickel-iron.

The couple has donated the meteorite to MSC to study. Such space samplings are rare, and only about 1500 are in museums around the world.

Similar specimens are expected to be found on the lunar surface during manned exploration of the moon, and early study of



WEST TEXAS GEOLOGY TRAINING—Sixteen of the Astronauts spent two days early this month in the Marathon Basin and Big Bend National Park in a field training exercise in geology which will aid them in obtaining samples of the moon's surface. Photo (above left) shows the group taking samples of the chalky volcanic ash deposit in an exposed rock formation....the moon, the reason for this training, is visible in the upper right corner of the photo. A rock formation (center photo) is charted using a Bronson compass by (l. to r.) Astronauts David R. Scott and

Charles A. Bassett II, and Uel S. Clanton, geologist with MSC. Dr. Don Wilhelms (left), from the U. S. Geological Survey Office (right photo), points out a rock formation in the Marathon Basin in West Texas to (l. to r.) Astronauts R. Walter Cunningham, Alan L. Bean, and Edwin E. Aldrin Jr. The group included the 14 newest astronauts along with L. Gordon Cooper Jr., and Alan B. Shepard Jr. The remaining group of 13 astronauts left last night to take part in field training in geology in the same area this week.

Space News ROUNDUP!

SECOND FRONT PAGE



GEMINI BALLUTE--A jumper at the Naval Parachute Facility, El Centro, Calif., tests a 36 inch Ballute, with dual suspension, to be used in the Gemini Personnel Recovery System. The self inflating Ballute will stabilize an astronaut, preventing him from fatally spinning or coining during free fall down to 10,000 feet where his final recovery parachute will deploy. Also shown is free falling jumper photographing the test.

MSC-Florida Operations Reorganization Announced

Dr. Robert R. Gilruth, director, Manned Spacecraft Center, announced the reorganization of MSC operations at Cape Kennedy, Fla. on March 30 as part of a broad NASA organizational realignment aimed at strengthening the Gemini and Apollo management structures at Washington, Houston and Florida.

The new organization, renamed MSC-Florida Operations, is headed by G. Merritt Preston. Preston has been in charge of MSC operations at the Cape since 1961. He is responsible for all MSC operations at the John F. Kennedy Space Center, and for the 327 MSC employees there. Preston has been with NASA and its predecessor, NACA, since 1939.

Dugald O. Black has been named deputy manager. He is former technical assistant and acting manager of the PACE-S/C project office.

Three assistant managers were named, one each for Gemini and Apollo, and another in charge of engineering. John J. Williams is

assistant manager for Gemini; Jacob C. Moser for Apollo. William R. Durrett is Chief Engineer for the new engineering office. Durrett's deputy is A. M. Busch.

Four new divisions, organized with personnel from the former Preflight Operations Division, have been established. Arthur M. Busch was named chief of the Mechanical and Propulsion Systems Division, with W. R. Meyer as deputy. Durrett is acting chief of the Electrical Electronics Systems Division, with M. A. Wedding as deputy for telecommunications and W. T. Risler, deputy for electrical guidance and navigation. The position of chief, Electronic Ground Support Division is vacant at present. Division deputy is H. G. Johnson.

J. T. Garofalo has been named to head the Support Systems Division. H. E. McCoy was named deputy. All four divisions will support the Gemini and Apollo program offices.

Other key positions include: Paul C. Donnelly,



G. MERRITT PRESTON

head of the test conductor's office; John Janokaitis, operations engineering; F. M. Crichton, inspection and quality control; W. E. Williams, systems test integration office; B. Porter Brown, operations support, plans and programs, and Floyd D. Brandon, business manager.

Responsibilities of the reorganized MSC/Florida Operations unit are similar to those performed by the predecessor organization during Project Mercury, but include also acceptance testing at contractor factories and at all launch sites.

Aluminum Pressure Suit Undergoing Tests

Space-age tailors have designed an aluminum pressure suit for lunar wear which is styled more for practicality than appearance, and technicians here at Manned Spacecraft Center call it a "hard suit" for want of a nickname.

Officially it's a "constant volume, rigid, articulated, anthropomorphic protective suit."

It looks like a suit of armor, and its appearance almost defies the use of words like "mobility" and "comfort."

But it is comfortable and mobile, and is the most advanced space suit yet introduced into the astronauts' prospective wardrobe.

A prototype suit is undergoing a two-month evaluation at Manned Spacecraft



HARD SUIT--This prototype hard suit, allowing increased mobility and constant volume atmosphere, was delivered to MSC recently for two months of evaluation testing.

Center to determine whether it will be considered for wear on the

moon -- or perhaps the planets.

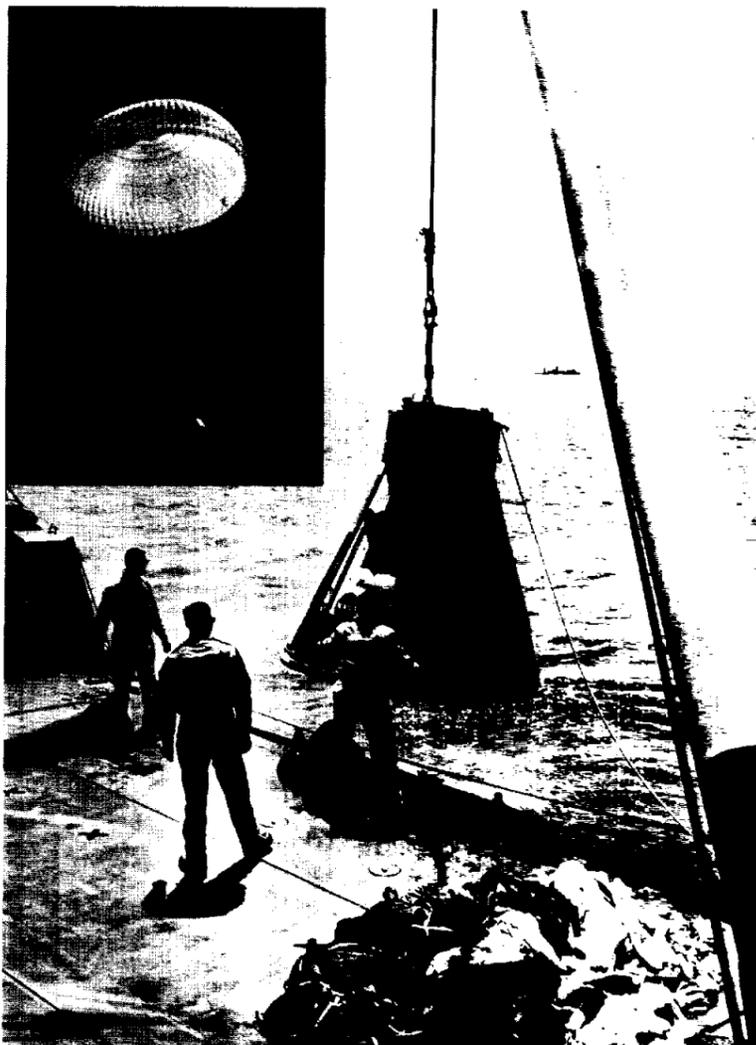
The rigid suit concept was originally introduced by Litton Industries of Beverly Hills, Calif. in 1956 for use in pressure chambers. With adaptations and improvements, an advanced version for space use was proposed to NASA by Litton last year.

Until now, pressure suits have been of fabric materials. Fabric still seems the most practical for wear inside spacecraft. But for moon-wear the one-piece hard suit may be more practical.

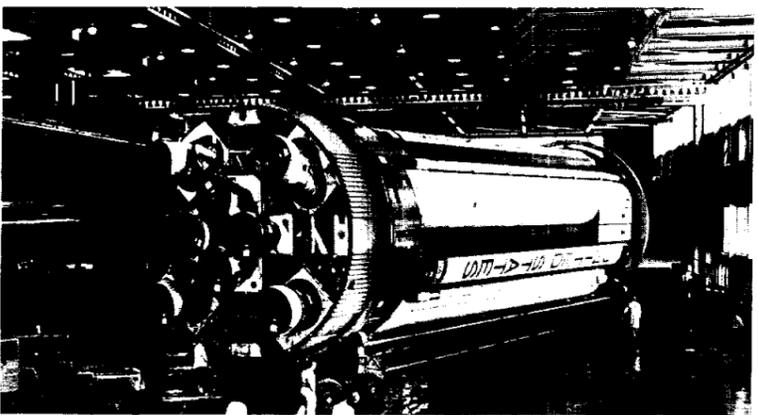
The hard suit can be pressurized to more closely duplicated atmospheric conditions here on earth. Nitrogen can easily be added to the oxygen breathing systems, again closely copying sea-level atmosphere.

Because it is solid, normal arm and leg movements will not cause pressure changes inside the suit, so pressure remains constant. In most conventional suits, bending the torso or limbs causes pressure changes throughout the suit.

Less oxygen may be needed to keep the hard suit under pressure because it has no zippers, only one main "clamshell" opening through which the astronaut dons the suit. A single latch closes the suit and makes it airtight and leak-proof.



PARASAIL TEST PARTIAL SUCCESS--Test engineers here at MSC termed the test of the parasail for spacecraft landings last week a partial success. The Gemini-size test vehicle is hauled out of the water in Galveston Bay after being safely lowered to the water's surface under its reserve 84-foot ringsail parachute (see photo inset), the prime landing system for Project Gemini. The test craft was being used to test the newly designed parasail which failed to deploy properly after several of its shroud lines broke during the test. The parasail, heaped on the deck of the Retriever recovery vessel in foreground, is a test system currently undergoing evaluation for possible use in land landings of future manned space missions.



THE FIRST SATURN I booster built at NASA's Michoud Operations, New Orleans, is rolled into position for final preparation for shipment to its static firing site at the Marshall Space Flight Center, Huntsville, Ala. The booster, topped with a live second stage, will orbit a meteoroid detection satellite when it is launched next year from Cape Kennedy, Fla.